RECLAMATION
Managing Water in the West

Firebaugh Canal Water District 2nd Lift Canal Lining Project Phase 5 – Washoe Avenue to Ashlan Avenue

Environmental Assessment No. 16-17-MP
Bay-Delta Program: CALFED Water Use Efficiency Grant
Bureau of Reclamation, Mid-Pacific Region
Sacramento, California

U.S. Department of the Interior
Bureau of Reclamation

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Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

List of Acronyms and Abbreviations

AFY	acre-feet per year
APE	area of potential effect
CAAQS	California Ambient Air Quality Standards
CCID	Central California Irrigation District
CWD	Cawelo Water District
Delta	Sacramento/San Joaquin River Delta
EA	Environmental Assessment
EPA	Environmental Protection Agency
FCWD	Firebaugh Canal Water District
GBP	Grassland Bypass Project
GDA	Grassland Drainage Area
GGS	giant garter snake
GHG	greenhouse gas
ITA	Indian Trust Assets
NAAQS	National Ambient Air Quality Standards
NHPA	National Historic Preservation Act
NO_x	nitrous oxides
National Register	National Register of Historic Places
PM_{10}	particulate matter between 2.5 and 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
Project	2nd Lift Canal Lining Project Phase 5 – Washoe Avenue to Ashlan Avenue
Reclamation	Bureau of Reclamation
ROG	reactive organic gases
Service	U.S. Fish and Wildlife Service
SHPO	California State Historic Preservation Officer
SIP	State Implementation Plan
SJKF	San Joaquin kit fox
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
VOC	volatile organic compounds

Section 1 Introduction

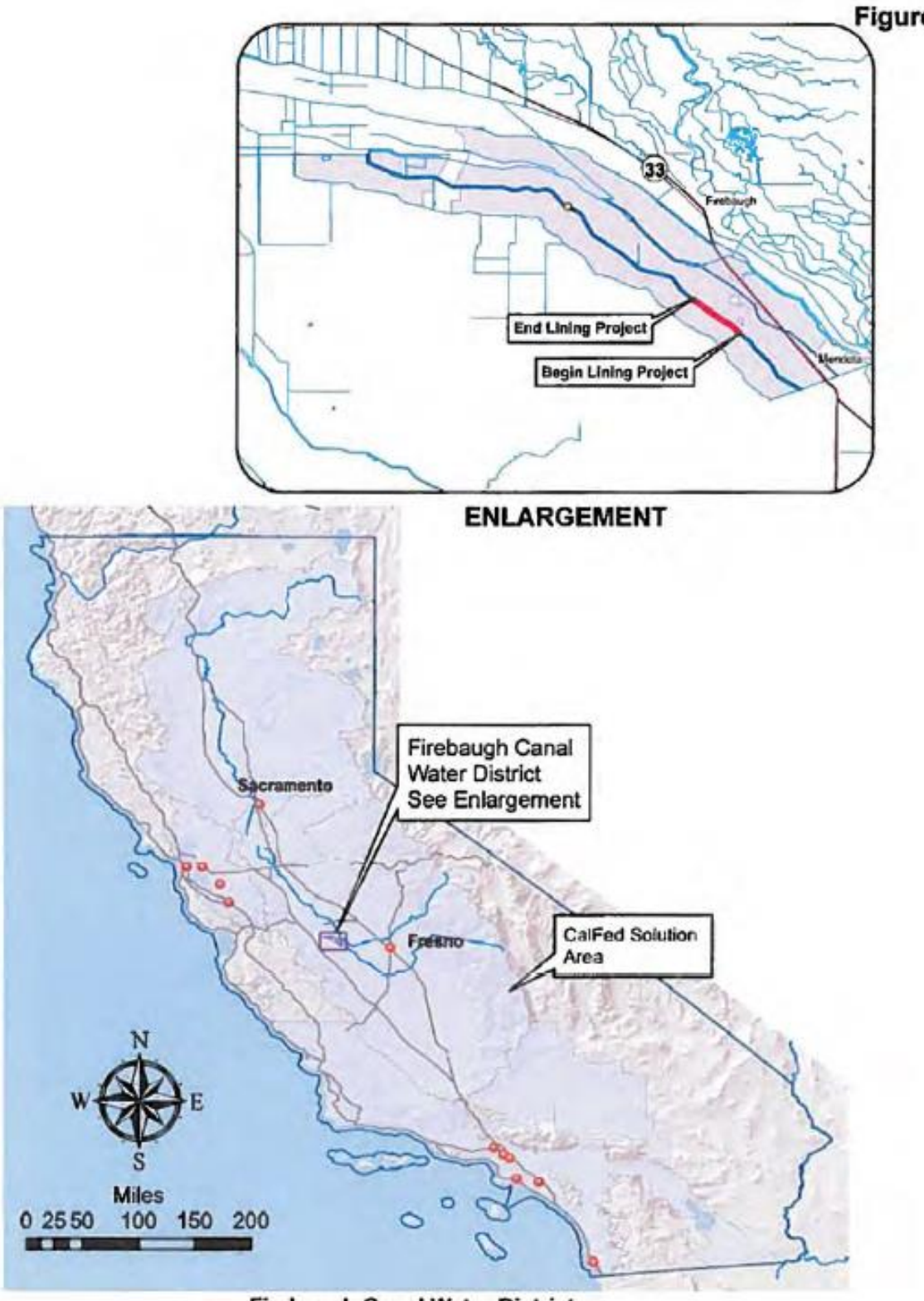
This Environmental Assessment (EA) has been prepared by the Bureau of Reclamation (Reclamation) to examine the potential direct, indirect, and cumulative impacts to the affected environment associated with providing federal grant funding to Firebaugh Canal Water District (FCWD) for its 2nd Lift Canal Lining Project Phase 5 – Washoe Avenue to Ashlan Avenue (Project). The Project is located approximately four miles southeast of the City of Firebaugh, within FCWD's service area boundary in Fresno County, California (see Figures 1 & 2).

FCWD receives its water supply through the Central Valley Project via the Delta-Mendota Canal from the Sacramento/San-Joaquin River Delta (Delta) by way of an exchange contract. Water use within FCWD boundaries is entirely for agricultural irrigation.

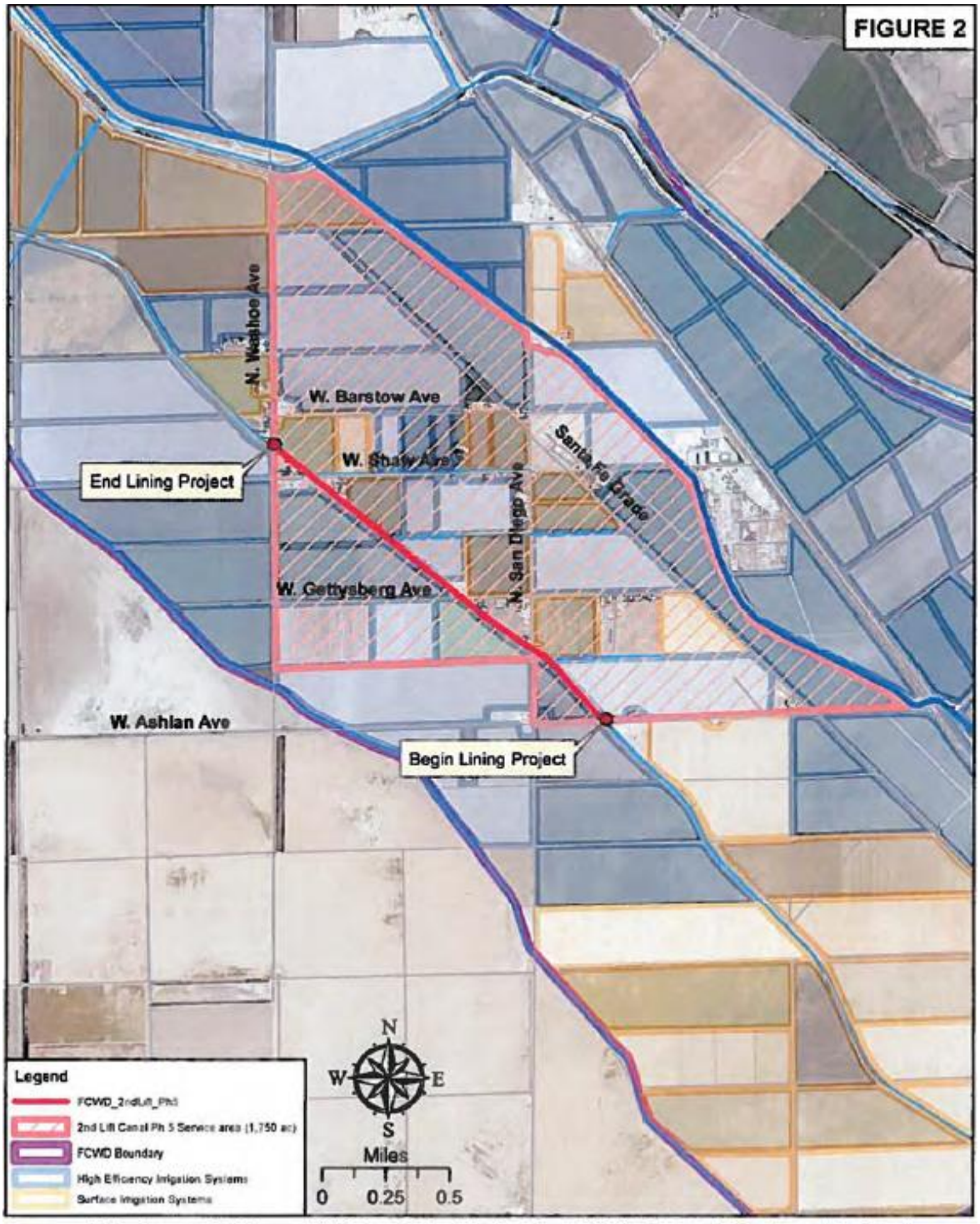
1.1 Need for the Proposal

FCWD lies within the Grassland Drainage Area (GDA), through which subsurface drain water generated within the region is discharged to the San Joaquin River. A shallow saline aquifer, which is high in salts, boron, and selenium, underlies the majority of the GDA. The shallow saline aquifer is managed through on-farm subsurface tile drainage systems and regional deep drains that intercept deep percolation from irrigation and seepage from unlined canals. This drain water is discharged to the San Joaquin River through the Grassland Bypass Project (GBP). The GBP operates under a waste discharge permit, which regulates the load of selenium that can be discharged and aims to eliminate all discharges from the GDA by 2019. In order to accomplish this, the participating districts need to implement practices that reduce drainage production, such as seepage reduction and increasing water conservation. FCWD needs to reduce seepage losses and improve its water management capabilities in order to conserve water and reduce production and contribution of pollutant-containing subsurface drainage to the San Joaquin River. To manage these discharges to the San Joaquin River as a participating agency in the GBP, FCWD helped develop an In-Valley Drainage Solution such that no subsurface drain water leaves the GDA boundary.

Figure 1



Firebaugh Canal Water District
Location Map - 2nd Lift Canal Lining Project
Phase 5: Ashlan Avenue to Washoe Avenu



Firebaugh Canal Water District - 2nd Lift Canal Lining Project
Phase 5 - Project Service Area

Section 2 Proposed Action and Alternatives

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not award a Department of the Interior Bay-Delta Program: CALFED Water Use Efficiency Grant to facilitate water conservation and seepage reduction measures at FCWD. Although it is possible that FCWD may find alternative sources of funding for the Project, for the purposes of this EA, the consequence of Reclamation not providing funding for the Project would be no construction of the Project. The 2nd Lift irrigation system would continue to provide irrigation service to its users in its current condition as a partially concrete-lined canal. Seepage and deep percolation to the drainage basin and loading of selenium, boron, and salts to the San Joaquin River via the GBP would continue at current levels.

2.2 Proposed Action

Reclamation proposes to award a Department of the Interior Bay-Delta Program: CALFED Water Use Efficiency Grant to the FCWD to fund a portion of the Project. The Project would involve lining 1.7 miles of FCWD's earthen 2nd Lift Canal with concrete from Washoe Avenue to Ashlan Avenue (see Figure 2). The Project would also involve upgrading irrigation turnout connections with pre-cast concrete gate structures that can accommodate the trash screens necessary for high-efficiency irrigation system upgrades.

2.2.1 Construction Activities

The Project is proposed to be implemented in the winter months of November 2016 through January 2017.

- Earthwork (November – December)**:** Construction stakes will be placed along the alignment, and turnout structures along the alignment removed. The existing channel would be backfilled with approximately 20,000 cubic yards of material from the canal bank, and compacted to the final design grade according to the drawings. Backfill would be performed by three excavators in lifts and compacted with one sheep's foot roller to ensure proper soil density and moisture levels. Surveyed construction stakes will be placed along the project alignment and final grade will be checked against those stakes.
- Prism Excavation and Placement of Lining (December – January)**:** The channel prism would be excavated with one trencher and one grader to the appropriate lines and grade according to the drawings. Excavated material

would be deposited on the canal banks and graded to reform the canal road. Concrete lining would be placed with a slip-form sled built to match the design cross-section, dragged by a tractor and fed concrete with two ready-mix trucks. The sled spreads the concrete to a uniform thickness and provides a rough finish to the lining, which a crew of laborers follow with trowels and floats to smoothen the final finish. Prism excavation and lining placement may be done in sections to prevent the excavated prism from drying out or becoming oversaturated during a storm.

- Turnouts (January)**:** Irrigation turnout connections would be installed according to the drawings, which involves cutting and removing existing lining, excavating the turnout site with an excavator, and installing pre-cast concrete gate structures. Once installed, new lining would be poured to transition to the rest of the canal lining.
- Cleanup (January)**:** The canal road banks will be graded to the final design, ready for use, and all construction related debris will be removed from the site.

Ground disturbance for installation of the concrete lining and replaced turnouts will be limited to the canal prism. All of the work involved with the Project would be performed in previously disturbed contexts, and regularly-maintained canal infrastructure.

2.2.2 Environmental Commitments

a) All Project-related vehicle traffic will be restricted to the Action Area, which is the footprint of the Project, including staging areas, construction areas, haul routes on established roads, and a 200-foot buffer around those activities in which noise and dust could occur.

b) To reduce fugitive dust emissions, workers will implement and observe the following:
    a. Reduce vehicle speed to 15 mph on unpaved roads.
    b. Where equipment enter on to paved roadways from unpaved work areas, track out will be swept once a day.
    c. Stabilize stockpiled materials three times a day if not used immediately.

c) If Project activities overlap with the raptor and migratory bird nesting season (March 1 through August 31), a qualified biologist will conduct pre-construction surveys for active nests in the Action Area 10 days prior to the construction activities. If an active nest is located, FCWD will consult with the U.S. Fish and Wildlife Service (Service) to identify a suitable construction-free buffer around the nest and for further instruction. The buffer(s) will be identified on the ground with flagging, fencing or by other easily visible means, and will be maintained and monitored by a qualified biologist.

d) A preconstruction survey for burrowing owls will be performed, within the Action Area, no more than seven days prior to ground disturbing activities.

e) A worker awareness training on burrowing owl will be held prior to construction.
f) In the unlikely event that cultural resources or human remains are discovered during project implementation, work shall stop and the Reclamation Regional Archaeologist shall be contacted immediately.

Section 3 Affected Environment and Environmental Consequences

3.1 Resources Not Analyzed in Detail

Department of the Interior Regulations, Executive Orders, and Reclamation guidelines require a discussion of Indian sacred sites, Indian Trust Assets, and Environmental Justice when preparing environmental documentation. Impacts to these resources were considered and found to be minor or absent. Brief explanations for their elimination from further consideration are provided below:

3.1.1 Indian Sacred Sites

Executive Order 13007 (May 24, 1996) requires that federal agencies accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites. The Proposed Action is not on federal lands, and therefore, will not affect access to or use of Indian sacred sites.

3.1.2 Indian Trust Assets

Indian Trust Assets are legal interests in assets that are held in trust by the United States for federally recognized Indian tribes or individuals. The nearest ITA is the Table Mountain Rancheria, which is approximately 45 miles to the east. The Proposed Action does not have the potential to affect ITA (see Appendix A).

3.1.3 Environmental Justice

Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its program, policies, and activities on minority populations and low-income populations. No significant changes in agricultural communities or practices would result from the Proposed Action, other than potential changes to individual irrigation systems. These changes are not likely to have effects to any individuals or populations within the vicinity of the Project. Accordingly, the Proposed Action would not have disproportionately negative impacts on low-income or minority populations within the Project area.

3.2 Water Resources

The 2nd Lift Canal is a primary lift canal that delivers 25,500 AFY of irrigation water throughout FCWD. Full water allocation to FCWD is 85,000 AFY in a non-critical water year and 58,000 AFY in a critical (drought) year.

As previously stated, the FCWD lies within the Grassland Drainage Area of the CALFED Solution Area, most of which is underlain with a perched saline water table. This shallow water table is managed through on-farm subsurface tile drainage systems and regional deep drains that intercept seepage from irrigation and unlined canal systems. The tile systems within the District contribute an average 4,000 AFY of saline subsurface drain water to the GBP. According to a seepage study performed in 2012 on the FCWD's 2nd Lift Canal, the unlined portion of this canal loses approximately 220 AFY through seepage to the perched saline sink. This water is unusable for irrigation and contributes to the discharge of saline subsurface drain water to the San Joaquin River system and eventually to the Delta. The Proposed Action is estimated to reduce seepage losses by 220 acre-feet per year (AFY) and indirectly conserve 407 AFY as the upgraded turnout structure gates would allow farmers of 300 acres within the 2nd Lift service area to install high-efficiency irrigation systems. FCWD has farmers of 300 acres of agricultural fields within the 2nd Lift service area committed to the conversion to high-efficiency irrigation systems once all structural improvements are in place.

The reduction of 220 AFY in seepage losses is estimated to reduce the annual discharge of approximately 36 pounds of selenium, 3,600 pounds of boron, and 1,100 tons of salt into the drainage system. The indirect conservation of 407 AFY through future high-efficiency irrigation systems is also estimated to reduce discharges of an additional 66 pounds of selenium, 6,600 pounds of boron, and 2,050 tons of salt from the drainage system to the San Joaquin River and Delta. The water benefits resulting from the Proposed Action are summarize in Table 1.

Table 1. Proposed Water Benefits from the Project

Benefit	Calculated Amount	Percent Conserved/Reduced
Reduce Seepage	220 AFY	0.9% of 2nd Lift Canal Distribution
Water Supply Indirectly Conserved through Conversion to High-Efficiency Irrigation Systems	407 AFY	1.6% of 2nd Lift Canal Distribution
Improve Water Quality in Drainage System (Selenium)	From seepage reduction: 36 lbs From converting 300 acres to high-efficiency irrigation: 66 lbs	16% Load Reduction*
Improve Water Quality in Drainage System (Boron)	From seepage reduction: 3,600 lbs From converting 300 acres to high-efficiency irrigation: 6,600 lbs	3% Load Reduction*

Improve Water Quality in Drainage System (Salt)	From seepage reduction: 1,100 tons From converting 300 acres to high-efficiency irrigation: 2,050 tons	6% Load Reduction*

* Assumes full build-out of both the Project and irrigation system improvements. Percent reduction is based on the 2013 GBP discharges of selenium (638 lbs/AF), boron (309,000 lbs/AF), and salt (2,049 tons/AF).

3.3 Air Quality

The Proposed Action lies within the San Joaquin Valley Air Basin (SJVAB), the second largest air basin in the State. Air basins share a common "air shed", the boundaries of which are defined by surrounding topography and meteorology. Although mixing between adjacent air basins inevitably occurs, air quality conditions are relatively uniform within a given air basin.

The U.S. Environmental Protection Agency (EPA) and California Air Resources Board developed Federal and State health-based air quality standards, known as National and California ambient air quality standards (NAAQS and CAAQS), for criteria air pollutants. Criteria air pollutants consist of carbon monoxide, ozone (volatile organic compounds [VOC] or reactive organic gas [ROG] are ozone precursors), sulfur dioxide, nitrogen dioxide, inhalable particulate matter between 2.5 and 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and lead. The CAAQS also set standards for sulfates, hydrogen sulfide and visibility. The SJVAB lies within the management area of the San Joaquin Valley Air Pollution Control District (SJVAPCD), which is responsible for developing a local plan with control measures to meet or maintain the NAAQS/CAAQS. Section 110(a) of the Clean Air Act (42 U.S.C. 7401(a)) requires states to develop plans, known as State Implementation Plans (SIPs), that describe how they will attain NAAQS. Section 176(c) of the Clean Air Act (42 U.S.C. 7506(c)) requires that any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable SIP before the action is otherwise approved. The EPA promulgated the General Conformity Rule to ensure that such federal actions are consistent with a SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS for criteria air pollutants and achieving expeditious attainment of those standards. If an action does not conform to the SIP, the Federal agency must submit a conformity determination to the EPA, State and local air pollution control agencies, and to the public. The general conformity regulations apply to a proposed Federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by a proposed action exceed certain emissions thresholds, thus requiring the Federal agency to make a conformity determination. Federal actions that are exempt from the General Conformity Regulations include, but are not limited to, actions with associated emissions clearly at or below specified *de*

minimis levels and activities covered under transportation conformity (USEPA 2016).

Despite years of improvements, the SJVAB does not meet some NAAQS and CAAQS. The SJVAB is in nonattainment with the NAAQS for VOC and NO_x as ozone precursors and $PM_{2.5}$, and is in nonattainment with the CAAQS for PM_{10}. Table 2 below presents the local thresholds, Federal general conformity *de minimis* emissions thresholds, and attainment status of the SJVAB

Table 2. SJVAB Attainment Status and *De Minimis* Thresholds for Federal Conformity Determination, and SJVAPCD Thresholds

Pollutant	**Attainment Status[a]**	***De Minimis* Threshold (tons/year)**	**SJVAPCD Recommended Threshold of Significant Impact (tons/year)[d]**
VOC (as ozone precursor)	Nonattainment – Extreme	10[b]	10
NO_x (as ozone precursor)	Nonattainment – Extreme	10[b]	10
PM_{10}	Nonattainment - (CAAQS)	15[c]	15
$PM_{2.5}$	Nonattainment	100[b]	15

[a] Source: http://www.arb.ca.gov/desig/adm/adm.htm
[b] 40 CFR 93.153 [c] SJVAPCD Threshold: http://www.valleyair.org/transportation/ceqaanalysislevels.htm
[d] http://www.valleyair.org/transportation/ceqaanalysislevels.htm#thresholds

Construction emissions would vary from day to day and by activity, depending on the timing and intensity of construction, and wind speed and direction. Generally, air quality impacts from the Proposed Action would be localized in nature and decrease with distance. Ground disturbing activities would result in the temporary emissions of fugitive dust and vehicle combustion pollutants during earthwork activities and construction equipment and haul truck engine emissions. Standard best management practices, such as stabilizing unpaved roads and stockpiles, pavement track out sweeping, limiting vehicle speeds on unpaved roads, and vehicle maintenance will be employed to minimize these impacts. All construction work will occur in the existing canal prism between canal roads.

A project similar in nature, but slightly greater in magnitude, was implemented by FCWD in January 2015 that involved concrete-lining 2.6 miles of its 2nd Lift Canal, updating turnout connections and a pump station meter structure. That project contained more ground disturbing activities than the Proposed Action; therefore, emissions from the Proposed Action would be fewer. Calculated emissions from that project were estimated using the 2013 CalEEMOD software (version 2013.2.1), which incorporates emission factors for reactive organic gases

(ROG), NO_x, carbon monoxide, sulfur dioxide, and both fugitive and exhaust PM_{10}, and $PM_{2.5}$. Total emissions from the earlier project are presented in Table 3.

Table 3. Estimated Emissions for the FCWD 2nd Lift Canal Modernization & Lining Project Phase 4 – Washoe to Douglas Avenue (Aviles 2014: 12)

Pollutant	Construction (tons/year)[a]
ROG/VOC	0.14
NO_x	1.35
PM_{10}	0.41
$PM_{2.5}$	0.13
Carbon dioxide equivalents	106.40 (metric tons/year)

[a] Source: CalEEMOD version 2013.2.1

As shown in Table 3, the estimated emissions for the previous 2nd Lift Canal Lining project implemented in 2015 are below the *de minimis* thresholds for NO_x, ROG/VOC as ozone precursors, $PM_{2.5}$, and PM_{10}; therefore, a Federal general conformity analysis report was not required. Considering that the Project is similar in nature, but much smaller in magnitude to the previous 2nd Lift Canal project, emissions associated with the Proposed Action are expected to be lower than those listed in Table 2 and would not require a Federal general conformity analysis report. Notwithstanding this observation, the Proposed Action would comply with the SJVAPCD's Regulation VIII (SJVAPCD 2012) control measures for construction emissions of PM_{10}. One of these control measures includes the use of water with all "land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities" for fugitive dust suppression.

3.4 Biological Resources

The Action Area is the footprint of the Project, which includes staging and haul routes, and a 200-foot buffer around those activities in which noise and dust could occur. The present land use around the Action Area consists of active agricultural fields and orchards, farm roads and shoulders, and existing ditches and canal infrastructure that are cultivated, maintained, excavated, and sprayed on an annual basis. The majority of the crops grown within the FCWD consist of cotton, alfalfa, tomatoes, wheat, barley, melons, pomegranates, pistachios, asparagus and onions. There is no designated critical habitat in the Action Area.

On October 21, 2016, an official list of species protected by the Endangered Species Act of 1973 (as amended), including species listed as threatened, endangered, proposed and candidate species potentially occurring within the Action Area was generated from the Service's Information, Planning, and Conservation System website (Service 2016). A CNDDB query was also run for

listed species records that may exist in the Action Area or within dispersal distance up to a 10-mile radius. Environmental documents from previous projects in the general vicinity of the Action Area were also referenced to determine which federally-listed species may occur and be affected by the Proposed Action.

Table 4 includes federally-listed species potentially occurring within a 10-mile radius of the Action Area. Included is a brief description of each species' status, a determination of effects from the Proposed Action, and a summary of the rationale supporting the determination.

Table 4: Federally-Listed Species Identified as Potentially Occurring Within 10-Mile Radius of Action Area

Scientific Name	**Common Name**	**Federal Status**	**Effects**	**Potential habitat utilized by species in Action Area**
INVERTEBRATES				
Branchinecta lynchi	vernal pool fairy shrimp	T	NE	**Absent.** There is no vernal pool habitat in the Action Area.
Branchinecta longiantenna	longhorn fairy shrimp	E	NE	**Absent.** There is no vernal pool habitat in the Action Area.
AMPHIBIANS				
Ambystoma californiense	California tiger salamander, central population	T	NE	**Absent.** No vernal pool habitat or other suitable wetland habitat in the Action Area.
Rana draytonii	California red-legged frog	T	NE	**Absent.** Species absent from San Joaquin Valley floor and from vicinity of the Action Area. No suitable habitat in the Action Area.
REPTILES				
Gambelia sila	blunt-nosed leopard lizard	E	NE	**Absent**. There are 15 CNDDB occurrence records within 10 miles of the Action Area. However, there are neither occurrences nor suitable habitat in the Action Area.
Thamnophis gigas	giant garter snake (GGS)	T	NE	**Absent**. There are three records of GGS within 10 miles of the Action Area, with the closest occurrence record 3.9 miles southeast of the Action Area near Mendota Pool. This is within dispersal distance of GGS, but there is no connectivity between suitable aquatic habitat and the Action Area, and no suitable vegetation or denning habitat in the Action Area. See analysis below.
MAMMALS				
Dipodomys ingens	giant kangaroo rat	E	NE	**Absent**. No suitable habitat in the Action Area.

Scientific Name	Common Name	Federal Status	Effects	Potential habitat utilized by species in Action Area
Dipodomys nitratoides exillis	Fresno kangaroo rat	E	NE	**Absent**. There are two CNDDB occurrence records for this subspecies within 10 miles. These records are labeled as "possibly extirpated" and were last recorded in 1992. No suitable habitat in the Action Area.
Vulpes macrotis mutica	San Joaquin kit fox (SJKF)	E	NE	**Absent.** There are seven CNDDB occurrence records within 10 miles of the Action Area. However, there is a lack of suitable foraging and denning habitat in the Action Area and surrounding fields, and no SJKF have been observed during surveys near the Lift Canal System in the past four years. See explanation below.
BIRDS				
Coccyzus americanus	Western U.S. Distinct Population Segment yellow-billed cuckoo	T	NE	**Absent.** During a biological survey performed on August 19, 2016, no suitable habitat was observed in the Action Area. Marginal habitat consisting of a few willows and cottonwood trees exist along a portion of the 1st Lift Canal. The 1st Lift Canal is at least 3,950 feet away from the Action Area; therefore, if a yellow-billed cuckoo were to occupy potential habitat on the 1st Lift Canal, the Project would be far enough away to avoid noise impacts.
FISH				
Hypomesus transpacificus	delta smelt	T	NE	**Absent.** This species is not present within the FCWD irrigation delivery system.
Oncorhynchus mykiss	Northern California Distinct Population Segment steelhead	T	NE	**Absent.** This species is not present within the FCWD irrigation delivery system.
PLANTS				
Monolopia congdonii	San Joaquin woollythreads	E	NE	**Absent.** There is one CNDDB occurrence record 9.5 miles south, southeast of the Action Area. The record indicates it is possibly extirpated. There are no occurrences within the Action Area.
Chloropyron palmatum	palmate-bracted salty bird's-beak	E	NE	**Absent.** There are five CNDDB occurrence records within 10 miles of the Action Area. No occurrences have been observed in the Action Area.

Key:

(E) Endangered– Listed in the Federal Register as being in danger of extinction

(T) Threatened – Listed as likely to become endangered within the foreseeable future
(NE) No Effect – Project will have no effect on the species
(NLAA) Not Likely to Adversely Affect – Project may affect the species, but is not likely to adversely affect.

By reducing the seepage contribution to the local perched water table, the Proposed Action would reduce the production of subsurface drain water discharged to the San Joaquin River, and to the Delta. Reducing the production of subsurface drain water also reduces the discharge of selenium, boron, and salt into these waterways, improving water quality for many species. In addition, the FCWD has completed multiple canal lining projects within its service area. These previous projects were successful and no observations of listed species were made in the vicinity of the action areas.

3.4.1 Birds Protected Under the Migratory Bird Treaty Act

Based on habitat requirements of the bird species protected under the Migratory Bird Treaty Act and that are listed in the Service Official Species List for the Action Area, suitable habit is absent for the bank swallow (*Riparia riparia*), tricolored blackbird (*Agelaius tricolor*), bald eagle (*Haliaeetus leucocephalus*), fox sparrow (*Passarella iliaca*), Lewis's woodpecker (*Melanerpes lewis*), long-billed curlew (*Numenius americanus*), marbled godwit (*Limosa fedoa*), mountain plover (*Charadrius montanus*), Nuttall's woodpecker (*Picoides nuttallii*), oak titmouse (*Baeolophus inornatus*), peregrine falcon (*Falco peregrinus*), short-eared owl (*Asio flammeus*), western grebe (*Aechmophorus occidentalis*), and yellow-billed magpie (*Pica nuttalli*). During a reconnaissance level survey performed by a biologist on August 19, 2016, the following bird species were observed or are known to occur in the Action Area: mourning dove (*Zenaida macroura*), northern mockingbird (*Mimus polyglottos*), great blue heron (*Ardea herodias*), killdeer (*Charadrius vociferous*), and loggerhead shrike (*Lanius ludovicanus*). These species may be disturbed while foraging during construction; however, there are thousands of acres of potential foraging habitat surrounding the Action Area that birds can temporarily relocate to. The Project would be constructed outside of the general migratory bird nesting season, which occurs March 1 through August 31; therefore, migratory birds will not be affected.

Potential suitable habitat does exist in the Action Area for burrowing owl (*Athene cunicularia*) and Swainson's hawk (*Buteo swainsoni*). Despite typical habitat characteristics of perennial grasslands, deserts, and scrublands, in the Central Valley burrowing owl can be found in burrows established in canal banks. In most cases, these canal banks are sporadically maintained. There are five CNDDB occurrence records of burrowing owl between seven and 10 miles from the Action Area. Four of these occurrences are presumed active burrows in the disturbed context of canal embankments, which is similar to the Action Area. Burrowing owls use abandoned burrows for nesting, such as those dug by ground squirrels, foxes, and prairie dogs. Its nesting season is February 1 through August 31 (The California Burrowing Owl Consortium 1993: 2). The existing portion of earthen canal is maintained annually, removing weed growth and filling in

squirrel burrows to prevent canal degradation by deterring burrow establishment. Although no signs of burrowing owl were observed during the reconnaissance survey performed on August 19, 2016, a protocol-level survey for burrowing owl was performed on November 9, 2016 according to the California Burrowing Owl Consortium 1993 *Burrowing Owl Survey Protocol and Mitigation Guidelines.* The entire 1.7 miles of the 2nd Lift Canal to be lined was surveyed, and only one California ground squirrel burrow was observed. There were fresh signs of digging by a fossorial mammal and human food debris presumably collected by the occupant. There was no evidence of burrowing owl occupancy. The Action Area does not contain burrowing owl burrows, and individual burrowing owls were not observed.

There are numerous CNDDB occurrence records of Swainson's hawk within 10 miles of the Action Area, mostly found in mature cottonwood trees along the San Joaquin River. There are no large trees along the 2nd Lift Canal, with the exception of a few native and non-native trees on two residential dwellings that border the canal. The construction period is November through January, which is outside of the raptor and migratory bird nesting season of March 1 through August 31. All Project activities will be limited to the canal prism and canal roads. Although there are no large trees suitable for Swainson's hawk nesting within half a mile of the Action Area, there is suitable foraging habitat in surrounding agricultural fields where the hawk could forage all year long. Project-related noise from ground-disturbance and equipment engines could temporarily interrupt foraging Swainson's hawks and cause them to fly away. However, there are thousands of acres of suitable foraging habitat surrounding the Action Area that raptors can forage in.

If construction activities unexpectedly overlap with the active nesting season and cannot be avoided, a preconstruction survey will be performed for active nests, and appropriate buffers will be installed as necessary to avoid and minimize potential take of migratory birds.

3.4.2 Giant Garter Snake

GGS inhabits agricultural wetlands and other waterways such as irrigation and drainage canals, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands in the Central Valley (Service 1999). Habitat requirements for GGS consist of (1) adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) grassy banks and openings in waterside vegetation for basking; and (4) rodent burrows or rip rap in higher elevation uplands for cover and refuge from flood waters during the snake's dormant season in the winter (Service 2009).

There are three records of GGS within 10 miles of the Action Area, with the closest occurrence record 3.9 miles southeast of the Action Area near Mendota

Pool. However, considering the following factors, GGS are not expected to be present in the Action Area:

- The Action Area is at least 3.7 miles west of the nearest habitat with confirmed GGS presence and the surrounding landscape of row crops and other land uses is incapable of supporting GGS, which has changed dramatically in recent decades with a 60 percent reduction in rice acreage since 1988;
- A GGS survey was performed along the 2nd Lift Canal on September 28, 2012 and along the 1st Lift Canal on July 12, 2013 by a Service-approved biologist. The biologist determined that the canals and vast majority of the potential habitat within 200 feet of the canals were unsuitable for or incapable of supporting GGS (Hansen 2013; 2014);
- Features within the 2nd Lift Canal are largely isolated and generally lack the emergent aquatic and terrestrial vegetation that GGS rely upon for cover (Hansen 2014);
- The 2nd Lift Canal is regularly maintained to keep ground squirrel burrows filled, thus eliminating potential upland denning habitat in the canal prism.
- Construction will occur during the snake's inactive period (October 2– April 30) when GGS are dormant; and
- In the past four years that Reclamation provided grant funding to FCWD to concrete-line portions of its Lift Canal System, there were no observations of GGS individuals or signs of presence within the associated action areas during preconstruction surveys and construction periods.

3.4.3 San Joaquin Kit Fox

SJKF historically ranged in alkali scrub/shrub and arid grasslands throughout the level terrain of the San Joaquin Valley floor from southern Kern County north to Tracy in San Joaquin County, and up into more gradual slopes of the surrounding foothills and adjoining valleys of the interior Coast Range. Within this range, SJKF are associated with areas having open, level, sandy ground that is relatively stone-free to depths of about 3 – 4.5 feet. The SJKF are generally nocturnal and utilize subsurface dens, which may extend to six feet or more below ground surface, for shelter and for reproduction. SJKF are absent or scarce in areas where soils are shallow due to high water tables, impenetrable hardpans, or proximity to parent material, such as bedrock. SJKF also do not den in saturated soils or in areas subjected to periodic flooding.

According to CNDDB, there have been several historical sightings of SJKF (between 1920 and the 1990s) within 10 miles, and as close as 3.8 miles, of the Action Area. However, the Action Area contains neither high quality foraging habitat nor suitable SJKF denning habitat. Considering the following factors, SJKF are not expected to be present in the Action Area:

- The landscape of FCWD, including the Action Area, is, and has been for decades, highly disturbed from high intensity agricultural activities,

rodenticide use, and maintenance, which does not support suitable habitat for potential prey or SJKF dens. Due to these activities and lack of suitable denning soil, it is highly unlikely for denning habitat to be present within 200 feet of the Action Area.

- The closest known SJKF occurrence is 3.8 miles southeast of the Action Area. It is unlikely that SJKF would disperse across irrigation canals, through actively cultivated fields and through the Action Area where there is a lack of foraging habitat.
- In the past four years that Reclamation provided grant funding to FCWD to concrete-line portions of its Lift Canal System, there were no observations of SJKF individuals, signs of presence, or potential dens in the vicinity of the associated action areas during preconstruction surveys and construction periods.
- Project activities will be limited to daylight hours.

3.5 Cultural Resources

The Proposed Action would allow the expenditure of Federal funds by FCWD to concrete-line a portion of its 2nd Lift Canal and replace a series of turnout structures. There would be no new construction and there are no proposed activities resulting in new ground disturbance. Activities associated with the implementation of the Project involve dredging silt, and removing debris, rip-rap and turnout structures from the portion of the 2nd Lift Canal. Once these materials are removed, the canal prism would be shaped and prepared for soil stabilization, concrete lining placement, and installation of new turnout structures. The area of potential effects (APE) for the Project is defined as the segment of canal encompassing the prism and berms of the canal for 1.7 miles between Washoe Avenue and Ashlan Avenue, with a 130 foot corridor that encompasses the legal right of way for the 2nd Lift Canal, a cumulative area of approximately 24 acres. The vertical APE is confined to the designed canal prism. All staging and construction activities will be conducted within the canal and canal roads.

Reclamation coordinated with Applied EarthWorks, Inc., FCWD's cultural resources contractor, to conduct a cultural resources inventory and evaluation for the Project. The FCWD Lift System, which consists of the Main Canal, 1st Lift Canal, 2nd Lift Canal, and 3rd Lift Canal is the only identified cultural resource within the APE. As part of compliance for an earlier project, Applied EarthWorks, Inc. evaluated the entire FCWD Lift System and Reclamation used that evaluation in consultation with the California State Historic Preservation Officer (SHPO), receiving concurrence on November 25, 2015 (BUR_2015_1028_001) that the entirety of the FCWD Lift System is not eligible for inclusion in the National Register. As there are no historic properties within the current project's APE, Reclamation determined that a finding of no historic properties affected pursuant to 36 CFR §800.4(d)(1) is appropriate for the proposed undertaking. On November 8, 2016, Reclamation entered into

consultation with the SHPO on its findings. The SHPO concurred with Reclamation's findings.

In the event of an unanticipated archaeological discovery, the Project will cease operations and a member of Reclamation's cultural resource staff will be contacted immediately. Reclamation's cultural resource staff will provide direction on how to proceed and conduct any necessary correspondence and mitigation.

In the unlikely event that human remains are uncovered during this undertaking, the Project will cease immediately and Reclamation cultural resource staff will be contacted. Reclamation's cultural resource staff will provide direction on how to proceed. If human remains are discovered on lands under the jurisdiction of Reclamation, they will be treated in accordance to the provisions of the Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C 3001). If human remains are discovered on lands owned by any other non-federal entity, they will be treated in accordance to the provisions in the California Health and Safety Code (HSC 7050.5).

3.6 Cumulative Impacts

According to CEQ regulations for implementing the procedural provisions of NEPA, a cumulative impact is defined as *the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time* (40 CFR 1508.7).

3.6.1 Cumulative Impacts to Air Quality

The Proposed Action has the potential to impact air quality through emissions of the criteria pollutants of most concern from ground disturbance and construction equipment. As described earlier, FCWD lies within the SJVAB, which currently does not meet all CAAQS and NAAQS. Because the SJVAB encompasses seven counties in addition to Fresno County, emissions from projects occurring in those counties within the SJVAB and within the same general time period as the Proposed Action could lead to a cumulative impact.

The Central California Irrigation District (CCID) Molasses Ditch Lining Project (Molasses Ditch Project) will be implemented in the SJVAB simultaneously with the Proposed Action. The Molasses Ditch Project is located in Merced County, which is within the SJVAB. Reclamation awarded CCID with a Department of the Interior WaterSMART Water and Energy Efficiency Grant to assist in funding the water conveyance improvements along a two-mile segment of Molasses Ditch. Construction is proposed for December 2016 through January 2017. Reclamation also proposes to issue an encroachment permit to MU5 Farms for a

project involving constructing a turnout and irrigation pipeline off of Madera Canal to provide irrigation water to MU5 Farms' property. Construction is proposed to begin in December 2016. Emissions from the CCID and MU5 Farms projects were analyzed by looking at the calculated emissions estimates from other projects within the same air basin, and that have at least the same level of activity. The estimated emissions of these projects are presented in Table 4 below.

Table 4. Estimated Cumulative Mitigated Project Emissions

Criteria Air Pollutant	Proposed Action Emissions tons/year[a]	Total CCID, MU5 Farms Emissions[b]	Cumulative Emissions tons/year
ROG/VOC	<0.14	0.79	0.34
NO_x	<1.35	1.98	3.35
PM_{10}	<0.41	0.35	0.76
$PM_{2.5}$	<0.13	0.16	0.29
Carbon dioxide equivalents	<106.40 metric tons/year	196.28 metric tons/year	257.07 metric tons/year

[a] Source: CalEEMod Version 2013.2.1
[b] Source: Kahler 2016: 10; Martin 2016.

As shown in Table 4, the Molasses Ditch Project and MU5 Farms project have been estimated to emit less than the *de minimus* thresholds for NO_x and ROG/VOC as O_3 precursors, $PM_{2.5}$, and PM_{10}. In combination with FCWD's Project emissions, the total for these criteria pollutants are still below the *de minimus* thresholds. Although the Federal General Conformity Rule only applies to single projects, considering the combined emissions from these projects are still below the *de minimus* thresholds, potential cumulative effects to air quality would be negligible.

3.6.2 Cumulative Impacts to Greenhouse Gases

Greenhouse gas (GHG) impacts are considered to be cumulative impacts since any increase in greenhouse gas emissions would add to the existing inventory of gases that could contribute to climate change. The Project would lead to fewer vehicle trips to and from the turnout structures once they are upgraded, reducing CO_2 emissions by approximately 2.7 metric tons/year. The total estimated GHG emissions from the Project is 103.7 metric tons of carbon dioxide equivalents/year. There are no on-going operational emissions from the Project.

In considering when to disclose projected quantitative GHG emissions, CEQ has provided a reference point of 25,000 metric tons of carbon dioxide equivalent emissions on an annual basis below which a GHG emissions quantitative analysis is not warranted unless quantification below that reference point is easily accomplished (Council on Environmental Quality 2014). In California, the California Air Resources Board established a mandatory reporting rule for major sources of GHG (Title 17, California Code of Regulations, Subchapter 10, Article

2, Section 95101(a)(1)(A)(3)) as required by Assembly Bill 32, which established 25,000 metric tons/year as the threshold for mandatory emissions reporting for stationary sources. This California Code of Regulations incorporated by reference certain requirements promulgated by the EPA in its Final Rule on Mandatory Reporting of Greenhouse Gases (Title 40, Code of Federal Regulations, Part 98). However, California did not establish a threshold for cumulative emissions from temporary mobile sources such as construction equipment, which would be lower than permanent stationary sources. The 257.07metric tons of carbon dioxide equivalent per year anticipated to be emitted from the Proposed Project is well below 25,000 metric tons/year.

Section 4 Consultation and Coordination

4.1 Agencies and Groups Consulted

Reclamation coordinated with the FCWD, Applied EarthWorks, Inc., and California State Historic Preservation Officer in preparation of the EA.

4.2 Endangered Species Act (16 USC § 1531 et seq.)

Section 7 of the ESA requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that their actions do not jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of these species.

Reclamation has determined that the Proposed Action would have no effect on species listed or designated critical habitat under the Endangered Species Act of 1973, as amended, and consultation under the ESA is not required.

4.3 National Historic Preservation Act (54 USC § 306108)

Reclamation is consulting under Title 54 USC § 306108, commonly known as Section 106 of the NHPA, which requires that federal agencies give the Advisory Council on Historic Preservation an opportunity to comment on the effects of an undertaking on historic properties, properties that are eligible for inclusion in the National Register. The 36 CFR Part 800 regulations implement Section 106 of the NHPA. Section 106 of the NHPA requires federal agencies to consider the

effects of federal undertakings on historic properties, properties determined eligible for inclusion in the National Register.

Reclamation has determined that there would be no historic properties affected by the Proposed Action pursuant to 36 CFR § 800.4(d)(1). In a letter dated December 7, 2016, the SHPO responded with no objection to Reclamation's findings. With receipt of the SHPO's letter, Reclamation's responsibilities for NHPA, Section 106 compliance are fulfilled (see Appendix B).

Section 5 References

Aviles, A. 2014. *Firebaugh Canal Water District 2nd Lift Canal Modernization and Lining Project Phase 4 – Washoe to Douglas Avenue*: U.S. Bureau of Reclamation. Available: http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=18861. Accessed: July 27, 2015.

California Burrowing Owl Consortium. 1993. *Burrowing Owl Survey Protocol and Mitigation Guidelines*. Available: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83842&inline. Accessed: November 21, 2016.

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Council on Environmental Quality. 2014. Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews. Federal Register /Vol. 79, No. 247 /Wednesday, December 24, 2014.

Hansen, E. 2013. *Memo to Summers Engineering*, Sacramento, CA. 22 Jul 2013.

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Kahler, H. 2016. *Molasses Ditch Lining Project Central California Irrigation District*: U.S. Bureau of Reclamation. Available: http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=27066. Accessed: November 21, 2016.

Martin, N. 2016. *MU5 Farms Lateral 32.2 Turnout and Irrigation Pipeline Project on the Madera Canal*: U.S. Bureau of Reclamation.

SJVAPCD. 2012. *Rules and Regulations. Regulation VII*: SJVAPCD. Available: http://www.valleyair.org/aqinfo/attainment.htm. Accessed: July 27, 2015.

Service. 1999. Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*). Portland, Oregon. Ix+ 192 pp.

Service. 2009. *Species Account. Giant Garter Snake*: U.S. Fish and Wildlife Service. May 13, 2009.

Service. 2016. *Information for Planning and Conservation*. U.S. Fish & Wildlife Service. Web. 21 October 2016.

USEPA. 2016. Frequent Questions. *General Conformity: Frequent Questions*. U.S. Environmental Protection Agency. Available: https://www3.epa.gov/airquality/genconform/faq.html. Accessed: March 21, 201

Appendix A – ITA Determination

Indian Trust Assets
Request Form (MP Region)

Submit your request to your office's ITA designee or to MP-400, attention Deputy Regional Resources Manager.

Date: 10.21.2016

Requested by (office/program)	Alex Woodward (Aviles), MP-152
Fund	17XR0687NA
WBS	RX185279013002000
Fund Cost Center	RR02015200
Region # (if other than MP)	
Project Name	Firebaugh Canal Water District 2nd Lift Canal Lining Project Phase 5 – Washoe Avenue to Ashlan Avenue
CEC or EA Number	EA# 16-17-MP
Project Description (attach additional sheets if needed and include photos if appropriate)	Reclamation proposes to award a Department of the Interior Bay-Delta Program: CALFED Water Use Efficiency Grant to the FCWD to fund a portion of the Project. The Project would involve lining 1.7 miles of FCWD's earthen 2nd Lift Canal with concrete from Washoe Avenue to Shaw Avenue (see Figure 2). The Project would also involve upgrading irrigation turnout connections with pre-cast concrete gate structures that can accommodate the trash screens necessary for high-efficiency irrigation system upgrades.
***Project Location (Township, Range, Section, e.g., T12 R5E S10, or Lat/Long cords, DD-MM-SS or decimal degrees). Include map(s)**	Project Center: 36°48'2.05"N, 120°26'46.05"W See attached figures 1 and 2.

Alexandra Woodward — Signature

Alexandra Woodward — Printed name of preparer

11/16/16 — Date

Appendix A – ITA Determination

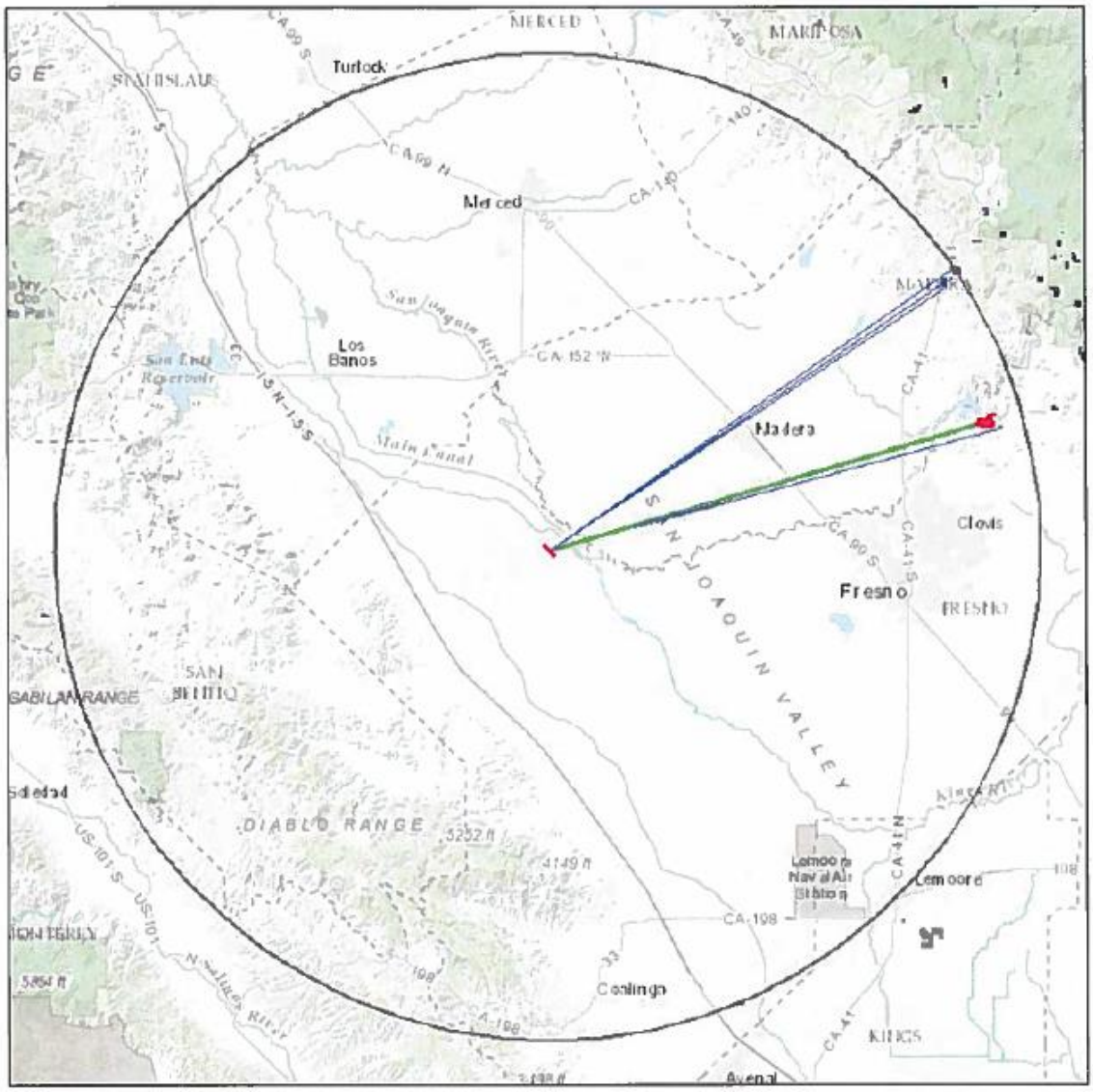
ITA Determination:

The closest ITA to the proposed **Firebaugh Canal Water District 2nd Lift Canal Lining Project, Phase 5 – Washoe Ave to Ashlan Ave** activity is the **Table Mountain Rancheria** about **45** miles to the **E/NE** (see attached image).

Based on the nature of the planned work it does / (does not) appear to
circle one
be in an area that will impact Indian hunting or fishing resources or water rights nor is the proposed activity on actual Indian lands. It is reasonable to assume that the proposed action will / (will not) have any
circle one
impacts on ITAs.

[signature]	Kevin Clancy	11/16/2016
Signature	Printed name of approver	Date

ITA Map_FCWD 2nd Lift Canal Lining Phase 5



Native American Lands FL

PDA

Rancheria

Native American Lands

<all other values>

Alaska Native Regional Corporation

Alaska Native Village Statistical Area

American Indian Reservation

0 5 10 20 Miles

Project Center: 36.80130 N, -120.44725 W.
Distance to closest Native American land: 45.41 miles
ITA: Table Mountain
Tribe: Table Mountain Rancheria

RECLAMATION
Managing Water in the West

CULTURAL RESOURCES COMPLIANCE
Division of Environmental Affairs
Cultural Resources Branch (MP-153)

MP-153 Tracking Number: 16-SCAO-233

Project Name: National Historic Preservation Act Compliance for Firebaugh Canal Water District (FCWD) Second Lift Canal Lining Project Phase 5, from Washoe to Ashlan Avenues, Fresno County, California.

NEPA Contact: Alex Woodward, Natural Resource Specialist

MP 153 Cultural Resources Reviewer: BranDee Bruce, Architectural Historian

Date: December 7, 2016

Reclamation proposes to issue a CALFED grant to FWCD for a canal lining project on their facilities in Fresno County, California. The expenditure of federal funds constitutes an undertaking with the potential to cause effects to historic properties, assuming such properties are present, requiring compliance with Section 106 of the National Historic Preservation Act (NHPA) as amended.

Applied Earthworks, Inc., FWCD's cultural resources contractor, has previously surveyed, recorded, and evaluated portions of the FCWD's Lift System, including the portions of the Second Lift Canal, as ineligible for listing on the National Register of Historic Places (National Register). On November 25, 2015, the State Historic Preservation Officer (SHPO) did not object with this finding. For this current undertaking, portions of the Second Lift Canal were surveyed and recorded, and the eligibility determination for the FCWD's Lift System was reviewed and recommended to remain the same. Based on this information, for this current undertaking, a finding of no historic properties affected pursuant to 36 CFR §800.4(d)(1) is appropriate.

Reclamation hand delivered a consultation package to SHPO on November 8, 2016 concerning the proposed undertaking and notification of a finding of no historic properties affected. In a letter dated December 7, 2016, SHPO responded with no objection to Reclamation's findings. With receipt of SHPO's letter, Reclamation's responsibilities for Section 106 compliance are fulfilled.

Reclamation has concluded the NHPA Section 106 process for this undertaking. After reviewing the EA for the proposed project, Reclamation finds that this action would not have significant impacts on properties listed, or eligible for listing, on the National Register. Consultation correspondence between Reclamation and the SHPO has been provided with this cultural resources compliance document for inclusion in the administrative record for this action. Please note that if project activities subsequently change, additional NHPA Section 106 review, including further consultation with the SHPO, may be required.

Attachments:
Letter: Reclamation to SHPO dated November 8, 2016
Letter: SHPO to Reclamation dated December 7, 2016